

# JOURNAL

OF THE

## ASIATIC SOCIETY OF BENGAL



Vol. LXVII. Part II.—NATURAL SCIENCE.

No. II.—1898.

*An Annotated List of the Butterflies of the Ké Isles.*—By LIONEL DE NICÉVILLE, F.E.S., C.M.Z.S., &c., and HEINRICH KÜHN.

(With Plate I.)

[Received November 25th, 1897; Read January 5th, 1898.]

The Ké, Key, or Kei Isles,\* called by the natives the Evar Isles, have a total area of about 680 square miles, and have been in the possession of the Dutch since A.D. 1645. They lie south of the equator, also to the south of Dutch New Guinea, to the south-east of the large island of Ceram and the nearer small Banda group of isles, to the west of the Aru group of isles, and to the north of the Timor Laut or Tenimber Islands. They are placed between  $5^{\circ} 0' - 6^{\circ} 5'$  S. Lat. and  $131^{\circ} 50' - 133^{\circ} 15'$  E. Long. They may be divided into four parts:—I. Great Ké Isle or Noehoe Ioet, II. Little Ké or Noehoe Roa, III. the Tiandoe islets, IV. the Koer islets. The last, according to Professor K. Martin, formed once a part of the eastern extension of the continent of Asia, while the first three appertain to the Australian region. Great Ké has a tertiary formation, consisting of limestone rocks; the surface is hilly, rising to nearly 3,000 ft. elevation. Little Ké and the other islands are all of coral formation, and are post-tertiary or quaternary. Wherever the soil and situation are favourable, the islands are planted with cocoa-nut and bread-fruit trees. The islands to the south of Little Ké are from the evidence of the rocks of an older formation of the quaternary period. All the

\* Pronounced "kay," or exactly as the letter "K," says Dr. A. R. Wallace in "The Malay Archipelago."

islands shew in different places distinct old strand and beach lines, which prove that they have been periodically raised by volcanic action. According to the natives, about sixty years ago one small island was so raised above the level of the sea on the western side during the occurrence of a great earthquake combined with a tidal wave. Also during recent years slight earthquakes are felt from time to time. On Little Ké is found the largest area under cultivation, "batatas," a kind of pea, and also beans, indian-corn and cocoa-nuts being largely grown. In some places in Little Ké are yet found forests of iron-wood, "linggoo-ah" and "loriah" wood; also on the mountains of Great Ké. But the forests are being cut down year by year, and become rapidly thinner, the more so as the Ké islanders every year increase the building of "praus" (native boats), which are sold to the people of the islands close to the Ké archipelago. The natives live principally on sago, which is largely cultivated; but rice has to be imported by traders. The exports from the Ké isles consist of logs of iron-wood; "praus," "tripang" (*bêche-de-mer*), turtle-shell, black-shell, green snail-shell, "copra" (dried cocoa-nuts), and some "bengkoedoe" (*Morinda bracteata*, Roxb.), used for dyeing. The whole population consists of about 24,000 souls, residing chiefly on Great Ké, of whom about 14,000 are heathens, 9,500 Muhammadans, and about 500 Roman Catholics, the latter resulting from a mission settled there for about the last ten years. The people are of very mixed blood, and are Malaiio-Polynesians. Their colour varies from light to dark brown and is of all shades. The hair is black, mostly long and slightly curly. There are of course many with short frizzly hair descended from immigrants from New Guinea. They divide themselves into four classes:— I. The "mel-mel" are the aristocracy, and are chiefly descended from immigrated traders from Ternate, Luang, Ceram, and Macassar in Celebes. From this class are mostly elected the chiefs, of whom there are usually three or four in each village. II. The "jam-ah," who are perhaps the original native aristocracy, of whom also different chiefs exist. III. The "renn-renn," who are free citizens. IV. The "tri-ri" or slaves, or better, bondsmen. Though there are so many chiefs, they have very little authority over their people, the family being the unit of government. The religion of the heathen portion of the population is a very simple one. They have one or two wooden idols erected in places they consider to be sacred, but believe much more in ghosts than in their gods; to the former they pray, and make offerings to them when commencing the cultivation of their fields, going a journey, in times of distress, &c. In general the people are very lazy, and live from hand to mouth, never thinking of the morrow. A little sago and a fish suffices for each meal, and of fish there is

an abundance in the sea for the trouble of catching. If they want a new cloth they can obtain it without trouble on credit from the numerous traders, paying for it hereafter with "copra," "tripang," &c. The Ké people consider themselves to be very courageous, but are in reality cowardly. In the old days before the Dutch took over the government of the islands, the natives were often fighting amongst themselves. These little wars, often extending over a considerable period, came to an end at last when one side or the other had killed a few of their enemies, seldom more than four or five. Under enemies, women and children were included as well as men. The tribe or village losing the fight and coming to the conclusion that peace was desirable, made terms with the opposite side, and paid a war indemnity, sometimes in land, but usually in old cannon ("lilas"), rifles, gongs ("tom-toms"), bracelets and chains of gold, plates, &c., &c.

The islands being very small have also a very poor fauna. The mammals consist of wild pigs, two species of *Cuscus*, a flying squirrel, a flying fox, some species of bats, rats and mice. On Great Ké a kangaroo and a marsupial badger are found. Birds are more common, but no paradise-birds occur.

The west monsoon blows from December till April, which is the wet-season; the east monsoon also from May to November brings much rain, alternating with fine clear days. The driest months are from July to November. The mean humidity of the atmosphere of the Ké Isles is 88.5%, and the mean temperature is 80.9° F. (27.4 Cels.), according to the observations of Mynheer H. C. W. Planten, an officer of the Dutch navy.

Great Ké possesses many small rivers, which form here and there beautiful waterfalls in their course from the mountains to the sea. In the east monsoon they are usually dry. On Little Ké, in which there are no hills, there is only one river, which is about a mile and a half long, but which has an outflow of about two cubic meters a second, and what is most strange, has a greater flow of water in the dry- than in the wet-season, no doubt from springs at its source or in its course. Besides the rivers there are in Great Ké one and in Little Ké two small lakes, which have no outlet, and seem to be merely accumulations of rainfall in natural depressions in the ground.

From what has been said above, it will be understood that the entomological fauna of the Ké archipelago is poor, but strangely enough (at any rate as far as the butterflies are concerned) it has more distinct endemic species than some of the neighbouring islands which are larger. For instance, three out of the six known species of *Euplœa* found on the islands are endemic to them, and three of them are very unusually-

coloured animals, being more or less pure white on the upperside in both sexes, and are mimicked by the females of two peculiar species of *Hypolimnas* (*H. polymena*, Felder, and *H. hevitsoni*, Wallace). H. M. S. "Challenger" in her memorable scientific expedition round the world, called at Ké Dulan, and Dr. A. G. Butler, in *Ann. and Mag. of Nat. Hist.*, fifth series, vol. xiii, p. 188 (1884), enumerates thirteen species of Butterflies from thence obtained on that occasion, all of which are noted below. The late Herr C. Ribbe in his paper on the Butterflies of Great Ceram (*Iris*, vol. ii, p. 187 (1889), mentions many species from the Ké Isles, all of which are referred to herein. Herr J. Röber of Dresden in *Tijd. voor Ent.*, vol. xxxiv, pp. 261–334 (1891), vol. xxxv, pp. 85, 86, pls. iii–vi (1892), has written a most interesting paper on the *Lepidoptera* of the group of Malayan islands which include Ceram, Goram, Maumerie, Key, Flores, Letti, Alor, Luang, Bonerate, Timor, Timor Laut, Kisser, Wetter, and Tanah Djampea, recording 42 (not 41 as stated at page 262) species from the Ké Archipelago. All these are mentioned below, and those not seen by us have a \* prefixed to their names. The present paper is based on materials obtained by Kühn during the nine years (from 1889) he has resided on the islands, and he has written the introduction and notes on the habits of the various species, while de Nicéville is responsible for the rest of the paper, and has seen it through the press. It is probable that the list is fairly complete, there are probably only a very few small species left to be recorded. We record 128 species from the Archipelago, out of which we have not seen only 17; of these latter most of the names are doubtless incorrect identifications, and appear in our list under other names.

#### Family NYMPHALIDÆ.

##### Subfamily DANAINÆ.

#### 1. HESTIA (*Nectaria*) D'URVILLEI, Boisduval.

In Great Ké this species is usually seen flying in the forest at a great height amongst the trees. It is very rare in Little Ké.

#### 2. DANAIIS (*Tirumala*) HAMATA, Macleay.

Very seldom seen in Little and Great Ké, common on Koer Isle. De Nicéville finds it difficult to distinguish *D. septentrionis*, Butler, from this species. Macleay's species is much the older.

#### 3. DANAIIS (*Limnas*) PETILIA, Stoll.

Key, Röber, as *Danaus chrysippus*, Linnæus. The Ké Isles examples agree with those from Australia. It is very rare on all the islands.

4. DANAIS (*Salatura*) LARATENSIS, Butler.

Röber as *Danaus plerippus*, Linnæus. Originally described from Larat in the Timor Laut Islands. Single specimens are seen everywhere on Great and Little Ké Islands all the year round, mostly on open spots covered with "alang-alang" grass (*Imperata arundinacea*, Cyrill.).

In de Nicéville's collection is an old male specimen of *D. intensa*, Moore, described from Java, Lombok and Borneo. As the species is unknown to Kühn, and is represented by *D. laratensis* in the Ké Isles, it is probable that the specimen did not come from the Ké Isles.

5. DANAIS (*Salatura*) AFFINIS, Fabricius.

Key (*Röber*), Ké Dulan (*Butler*). Very common on all the islands.

6. DANAIS (*Asthipa*) CITRINA, Felder.

Röber as *Danaus gloriola*, Butler. Common on Great and Little Ké Islands amongst bamboo clumps. Mr. Kirby has given some notes on this species in *Ann. and Mag. of Nat. Hist.*, sixth series, vol. iv, p. 157 (1889), but they are difficult to follow without seeing the specimens about which he wrote.

## 7. TELLERVO ZOILUS, Fabricius.

Röber as *Hamadryas nais*, Guérin. Butler as *H. niveipicta*, Butler, *Ann. and Mag. of Nat. Hist.*, fifth series, vol. xiii, p. 191, n. 6 (1884), from Ké Dulan. This "new species" hardly seems to differ from *T. zoilus*. Common everywhere in the bush in all the islands. The male secondary sexual characters in the genus *Tellervo* (= *Hamadryas*, Boisduval, nec *Hamadryas*, Hübnér) do not appear to have been described. They are found in the forewing, and consist of a greater sinuosity of the inner margin than in the female; with a large clump on the upper surface of modified dull (instead of intensely black like the rest of the ground-colour) black scales from the inner margin commencing at the base of the wing but not reaching the outer margin, and extending forwards as far as the first median interspace, these modified scales being entirely absent in the female.

8. EUPLÆA (*Vadebra*) EURYPON, Hewitson.

Moore. Röber. Ké Dulan (*Butler*). Common on all the islands in October and November, but single specimens are found all the year round. Mr. F. Moore in his monograph of the subfamily (*Proc. Zool. Soc. Lond.*, 1883, p. 284, n. 2) places this species in his genus *Chirosa*, in which

he is followed by Dr. Butler in 1884 and by Col. C. Swinhoe (*Journ. Linn. Soc. Lond., Zoology*, vol. xxv, p. 342 (1896), that genus coming into Mr. Moore's second section of the *Euplœina* with "One 'sexual mark' or scent-producing organ on the forewing." *E. eurypion* has no male secondary sexual characters whatever, and therefore comes into Mr. Moore's first section "No 'sexual mark' or scent-producing organ on the forewing," and seems to fall best into the subgenus *Vadebra*.

9. *EUPLŒA (Chanapa) SACERDOS*, Butler.

Originally described from Larat in the Timor Laut Islands. Dr. Butler says that the discal series of white spots on the hindwing are not [posteriorly] notched, but in some of our specimens though not in others as many as five are occasionally notched. The species is very common on the Tiandoe and Koer islets, but only two specimens have been taken on Great Ké, and none on Little Ké.

10. *EUPLŒA CALLITHOË*, Boisduval.

Mr. Moore in his Monograph of the *Euplœina*, p. 305, places this species under the genus *Salpina*, but according to our specimens and Dr. O. Staudinger's figure of the male from New Guinea in *Iris*, vol. viii, p. 159, pl. iv, fig. 1, *male* (1895), it is a true *Euplœa*. It occurs only on Great Ké, never found on Little Ké or the adjoining islets.

11. *EUPLŒA (Calliplœa) HOPFFERI*, Felder.

Röber. This species has been figured by Col. Swinhoe in *Journ. Linn. Soc. Lond., Zoology*, p. 342, pl. xvi, fig. 1, *male* (1896). Found on all the islands everywhere. It is the rarest species of the genus, except the species which next precedes.

12. *EUPLŒA (Calliplœa) VISENDA*, Butler.

Originally described from Maroe Island of the Timor Laut group. Found in the Ké Islands group only on Tiandoe and Koer, where it is very common and extremely variable in the size and extent of the white markings, no two specimens being exactly alike. Some specimens are very small, perhaps the smallest in the genus, expanding only 2.0 inches in alar expanse.

13. *EUPLŒA (Hirdapa) ASSIMILATA*, Felder. Plate I, Fig. 1, *larva*.

Moore as *H. fraterna* Felder, from Ké Island. Röber. Butler as *H. fraterna*, from Ké Dulan. This species was originally described from the "Arru Islands," while *E. fraterna*, Felder, was described from a female only from the same islands, on the same page. Probably the

two species are really one. It is very common on nearly all the islands of the Ké group, but it seems rare on Koer. Mr. Kühn has bred it. The larva is black; each segment bears several yellow stripes, the first of which extends lower than the others and encloses the black spiracle. The head, abdomen and legs are entirely black. The body bears four pairs of long fleshy subdorsal tentacles tapering to a point, each is basally carmine-red, becoming black towards the apex, the first pair is placed between segments two and three, the second between three and four, the third between four and five, the fourth between ten and eleven. The pupa is greenish and metallic.

The *Eupleas* of the Ké Archipelago are very interesting, and form four distinct groups as regards coloration and markings:—I, *E. eurypus*, Hewitson, *E. hopfferi*, Felder, and *E. assimilata*, Felder, which are mimicked by the females of *Hypolimnias polymena*, Felder, and *H. hewitsoni*, Wallace; II, *E. sacerdos*, Butler; III, *E. callithoë*, Boisduval; IV, *E. visinda*, Butler.

#### Subfamily SATYRINÆ.

##### 14. MYCALESIS (*Calysime*) PERSEUS, Fabricius.

Occurs on Great and Little Ké in fields of "alang-alang" grass, but is not common. The ocellated wet-season form appears to be the only one found on the islands. In both sexes the ocellus in the first median interspace of the forewing on the upperside has a small pure white pupil.

##### 15. MYCALESIS (*Mydosama*) SIRIUS, Fabricius.

Little and Great Ké Isles. Much rarer than the preceding species. "*Satyris*" *manipa*, Boisduval, and *Mycalesis daidis*, Hewitson, are synonyms.

##### 16. YPTHEMA ARCTOUS, Fabricius.

Röber. Occurs commonly everywhere on all the islands, and frequents meadows.

##### 17. HIPIO CONSTANTIA, Cramer.

Röber and Ribbe as *Melanitis crameri*, Butler, described from New Britain, equals "*Cyllo*" *amabilis*, Boisduval, from New Ireland. The type of the genus *Hipio* of Hübner is the present species. It is doubtfully distinct from the genus *Melanitis*, Fabricius. *H. constantia* is rather rare in all the islands, keeping chiefly to bamboo and sago scrub. Colonel Swinhoe has described a single male of this species from "Ké

Island" as *M. gylippa* in Ann. and Mag. of Nat. Hist., sixth series, vol. xii, p. 255 (1893), collected by Halliburton. Swinhoe does not refer to *H. constantia* in his description. Our females from the Ké Isles agree very well with Cramer's original figure of that sex, which was described from the Molucca Isles.

Subfamily ELYMNINÆ.

18. ELYMNIAS (*Dyctis*) MELANE, Hewitson.

Rare on all the islands, usually seen flying about swampy places in the jungle.

Subfamily NYMPHALINÆ.

19. CUPHA CRAMERI, Felder.

Common everywhere on Little Ké, but more so in forests than elsewhere, flying close to the ground between low bushes. Our specimens agree fairly well with Cramer's figures of this species from Amboina in Pap. Ex., vol. ii, pl. cxlviii, figs. D, D (F, F in text), *male* (1777), as "*Papilio*" *lampetia*. Dr. Aurivillius says that these figures equal the "*Messaras*" *crameri* of Felder, nec "*Papilio*" *lampetia* of Linnæus, as indeed was pointed out by Dr. Felder when renaming Cramer's figures.

20. ATELLA EGISTA, Cramer.

From Little and Great Ké. Flies high and is seldom caught; keeps to the tops of bushes.

21. CETHOSIA CYDALIMA, Felder. Plate I, Figs. 2, *larva*; 2a, *head of larva*; 2b, 2c, *pupa*.

Röber. Ké Dulan, Butler, as *C. insulata*, Butler. Ribbe as *C. cydippe*, Linnæus, var. *damasippe*, Felder. Dr. Butler in Cist. Ent., vol. i, p. 165, n. 37 (1873), described *C. insulata* from Ké Island. He does not give the sex of the types. It is probably the same as *C. cydalima*, originally described from the Arru Islands. The species on Little and Great Ké is not common, but is less rare at the beginning and end of the wet than at other seasons. Mr. Kühn has bred it, the larva being of the usual form, with six compound black spines on each segment, the dorsal pair twice as long as the two lateral pairs; the ground-colour of the larva deep black, each segment posteriorly with a pair of sulphur-yellow bands reaching below the spiracles. The pupa is whitish, clouded with pale brown, with four pairs of golden spots on the dorsum.



22. CETHOSIA LAMARCKII, Godart.

Occurs only on Tiandoe and Koer Islets, not found on Great and Little Ké Isles.

23. CYNTHIA CYCNIA, de Nicéville.

*C. cynia*, de Nicéville, Journ. A. S. B., vol. lxvi, pt. 2, p. 547, n. 4, pl. iii, figs. 19, male; 20, female (1897).

Little and Great Ké. Single specimens are occasionally caught on flowers.

24. PRECIS IDA, Cramer.

Röber. Very common on all the islands all the year round.

25. PRECIS ZELIMA, Fabricius.

Kühn has sent one male specimen of this species to de Nicéville. In the collection of the latter are several examples of both sexes from Mackay in North Australia, with which the one from the Ké Isles agrees exactly. The species may be known from *P. ida*, Cramer, by having on the underside of the hindwing a decreasing series of two, three, or four creamy-white spots commencing on the middle of the costa posterior to the costal nervure. It is a little doubtful in de Nicéville's opinion if this character is really of specific value, as in the common *P. iphita*, Cramer, of India, the same variation is of frequent occurrence.

26. JUNONIA EXPANSA, Butler.

*Precis expansa*, Butler, Proc. Zool. Soc. Lond., 1883, p. 367, n. 5.

Röber as *J. erigone*, Cramer. Described from females from Larat in the Timor Laut Islands. In the Ké Isles it is rather variable, the tone of the ground-colour of both wings on both surfaces being much darker in some specimens than in others. The male is much darker coloured than the female, especially so on the underside. In Little and Great Ké it is very common all the year round.

27. \*JUNONIA ORITHYIA, Linnæus.

Röber as *J. orithya* [sic!]. This is we think a very doubtful record; at any rate it will not be the typical form of the species which is found in the Ké Isles.

28. JUNONIA VILLIDA, Fabricius.

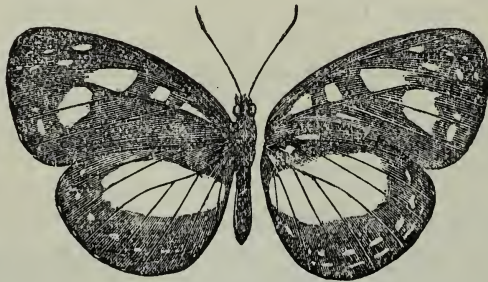
Very rare on Little and Great Ké.

29. \**JUNONIA TIMORENSIS*, Wallace.

Ké Dulan (*Butler*). We have not seen this species from the Ké Isles.

30. *NEPTIS (Rahinda) CONSIMILIS*, Boisduval. Plate I, Figs. 3, *young larva on food-plant*; 3a, *full-grown larva*.

Not very rare on Little and Great Ké, single specimens being here and there met with. Mr. Kühn has bred this butterfly. The ovum is laid singly on the underside of the leaves of a papilionaceous shrub, it is shaped like a raspberry, is pale yellow, and slightly hairy, and furnished with raised knobs or tubercles in seven rows, the largest row having 14 tubercles. Larva dark olive-brown, shagreened; head bifurcated in the dorsal line; the second, third and fifth segments furnished with a pair of processes, the pair on the third segment the longest; there is a pale dorsal line from the third to the thirteenth segment, and a similar spiracular line. For protection against its enemies the larva has developed the following curious habits:—It bites half through the middle of one of the bipennate leaves of its food-plant, which is probably a species of *Acacia*, and also bites through entirely the small leaves at the end of the stem beyond the half-bitten-through part, but fixes each of these bitten-off leaves to the stem by a thread. The larva rests on the underside at the extreme end of the stem, which has bent over at a right-angle from the unbitten portion, and feeds on the faded, dried-up, brown leaves, which very quickly become of the same shade of colour as the larva. When touched, the larva shakes the leaves. The larva is very sluggish, and moves very slowly, step by step.

31. *NEPTIS LACTARIA*, Butler.

*Athyma lactaria*, Butler, *Ann. and Mag. of Nat. Hist.*, third series, vol. xvii, 98, n. 1 (1866); *Neptis lactaria*, de Nicéville, *Journ. A. S. B.*, vol. lxvi, pt. 2, p. 535, n. 2, *woodcut of female* (1897).

Rare on Little and Great Ké Isles.

32. NEPTIS (*Phædyma*) NECTENS, de Nicéville.

*N. (Phædyma) nectens*, de Nicéville, Journ. A. S. B., vol. lxvi, pt. 2, p. 548, n. 6, pl. i, fig. 3, *female* (1897).

Very rare on Little and Great Ké, not known from the other islands.

33. \*NEPTIS VENILIA, Linnæus.

Ribbe records this species from the Key Isles as "*Athyma*" *venilia*, but we have never seen it from thence.

34. HYPOLIMNAS BOLINA, Linnæus.

Röber. Common in December and January on all the islands, but single specimens are met with all the year round. The form of the female occurring in the islands is that called *Papilio iphigenia* by Cramer, Pap. Ex., pl. lxvii, figs. D, E (1775), from Batavia in Java. The male is normal.

35. HYPOLIMNAS POLYMENA, Felder.

Röber as *H. alimena*, Linnæus, var. *heteromorpha*, Röber. The male of this species is typical *H. alimena*, Linnæus, but the female, which gives its name to the species, has been named *H. polymena* by Felder, from the Arru Isles, and *H. heteromorpha* by Röber. It is a mimic of *Euploea assimidata*, Felder, and the other two similarly coloured *Euploeas* found in the Ké Archipelago. It is common in the wet season, and has been figured by Swinhoe in Journ. Linn. Soc. Lond., Zoology, vol. xxv, p. 342, pl. xvi, fig. 2, *female* (1896).

36. HYPOLIMNAS HEWITSONI, Wallace.

Apparently rare in the Ké Archipelago, Kühn having only obtained three or four worn male specimens on Tiandoe. Both sexes of this fine species were described and figured from the Ké Islands by Hewitson in Proc. Zool. Soc. Lond., 1858, p. 464, pl. liv, figs. 2, *male*; 1, *female*, as *Diadema pandarus*, Linnæus, and Wallace in Trans. Ent. Soc. Lond., 1869, p. 282, n. 8, named it *Diadema hewitsoni* from the same place. The female, which we have not seen, is heavily marked with white on both wings on the upperside, and doubtless mimics the three similarly marked species of *Euploeas* found on the Ké Isles.

37. PARTHENOS BRUNNEA, Staudinger.

Röber. This is quite distinct from *P. sylvia*, Cramer, from Java, and *P. salentia*, Hopffer, from Celebes. Single specimens on Little Ké and Great Ké are found all the year round.

38. EUTHALIA (*Lexias*) ÆROPUS, Linnæus.

Ribbe as *Symphædra aeropa*. Occurs only on Great Ké on the tops of hills, and is very rare. Not found on Little Ké Island.

## 39. SALAMIS SABINA, Cramer.

Sometimes rare, at other times common, on all the islands.

## 40. DOLESCHALLIA AUSTRALIS, Felder.

Ké Dulan (*Butler*). At times scarce, sometimes common, on Little and Great Ké Islands.

## 41. DOLESCHALLIA POLIBETE, Cramer.

Commoner than the preceding species on Little Ké and Great Ké Isles. It is very interesting that two such distinct species should be found together on one small group of islands. *D. polibete* appears to be found in the Himalayas, Assam, Burma, South India, Ceylon, the Andaman and Nicobar Islands, and again in Lombok, Amboina, and the Ké Islands. It was originally described by Cramer from Amboina in Pap. Ex., vol. iii, pl. ccxxxiv, figs. D, E, *female* (1779); Cramer's figure under the same name on pl. ccxxxv, figs. C, D, *male*, also from Amboina, has been named *D. crameri* by Distant in Eut. Month. Mag., vol. xxii, p. 41 (1885), and is a quite distinct species. The Lombok, Amboina and Ké Islands form differs from the form from the other localities named above as *D. polibete* in having the four subapical white dots on the forewing much more strongly developed, the more western form having them more feebly developed and sometimes entirely absent, but this solitary character is one on which it is hardly sufficient to base a distinct species. *D. bisaltide*, Cramer, and *D. pratipa*, Felder, seem to be one species, which is found in the Malay Peninsula, Sumatra, Nias, Java, Bawean, Borneo, Bali, Lombok and the Philippines.

42. CHARAXES KEIANUS, Rothschild. Plate I, Figs. 4, 4a, 4b, *pupa*.

*C. pyrrhus keianus*, Rothschild, Nov. Zool., vol. iv, p. 508, n. 2 (1898).

A rare butterfly on Little and Great Ké Islands. Mr. Kühn has bred the larva, which feeds on *Albizzia* sp., and also *Mesua ferrea* (Ironwood). The pupa is of the usual shape, very broad, rounded, smooth, with some small knobs only round the cremaster. In colour it is pale green, with snow white stripes and dashes. This species is described by de Nicéville in Journ. Bomb. Nat. Hist. Soc., vol. xii, p. , n. 8, pl. Z, figs. 13, *male*; 14, *female* (1898). When describing it de Nicéville did not know that it would subsequently be named by the Hon. Walter Rothschild.

## Family LEMONIIDÆ.

## Subfamily LIBYTHÆINÆ.

## 43. LIBYTHEA ANTIPODA, Boisduval.

Herr Kühn has taken a single specimen of this species, and saw one other. The identification is his, de Nicéville has none from the Ké Archipelago.

## Family LYCÆNIDÆ.

## 44. GERYDUS ACRAGAS, Doherty.

Not very rare in Little Ké Island. Most frequently caught on the young leaves of a species of *Sambucus* at rest amongst black ants, the butterfly as well as the ants probably feeding on the sap of the leaf-buds. The male has a small oval whitish patch surrounding the swollen base of the third median nerve on the upperside of the forewing; no other markings whatever on the upperside. The female has the markings on the upperside exactly as described for the species by Doherty. Both sexes on the underside of the forewing have the markings exactly as described by Mr. H. H. Druce in Proc. Zool. Soc. Lond., 1895, p. 561, pl. xxxi, figs. 9, *male*; 10, *female*, for *G. vincula* from Borneo. Doherty unfortunately does not say if the submarginal band of confluent markings extends from the apex to the outer angle or not. *G. vincula* differs from *G. acragas* in the female being uniformly dull brown without markings on the upperside of the forewing. The "*Miletus*" *chinensis*, var. *ceramensis*, Ribbe, from South and East Celebes, Amboina, Saigun, Buru and Borneo (Iris, vol. ii, p. 247, n. 95, pl. v (nec i), fig. 2, *female* (1889), appears to be quite the same as *Geryden acragas*, and has two years' priority.

## 45. PITHECOPS BASSARIS, de Nicéville.

*P. bassaris*, de Nicéville, Journ. Bomb. Nat. Hist. Soc., vol. vii, p. 327, n. 4, pl. II, figs. 4, *male*; 5, *female* (1892).

Röber as *Eupsychellus* (n. g.) *dionisius*, Boisduval. Ribbe as *Plebejus dionysius*, Boisduval. It is found commonly on Little and Great Ké Islands during the wet season on roads and paths through swampy bush country. The genus *Eupsychellus* is a synonym of *Pithecopis*.

## 46. \*NEOPITHECOPS ZALMORA, Röber.

*Plebeius lucifer*, Röber, Iris, vol. i, p. 61, pl. iv, fig. 5 (1886).

Not seen from the Ké Isles by us. It was described from the Aru and Key Islands as *P. lucifer* by Röber. Herr Röber kindly sent

de Nicéville a specimen of this species named by himself from the Aru Isles, which enables de Nicéville to say confidently that *Plebeius lucifer* is a synonym of *Neopithecopis zalmora*. In vol. ii of Dr. O. Staudinger's and Dr. E. Schatz's *Exotische Schmetterlinge*, p. 273, n. 32, pl. xlviii (1892), reference is made to Herr Röber's genus *Papua*, the type of which is based on *Plebeius lucifer*. Consequently *Papua* falls to *Neopithecopis*.

47. MEGISEBA MALAYA, Horsfield.

Mr. de Nicéville has seen four specimens only from the Ké Isles of this widely distributed species, none of which have tails. It keeps chiefly to the tops of fruit trees, and is apparently rare, but is probably less often seen than it would be if larger, brighter coloured, or haunting lower stations. It occurs only as far as is known on Little Ké Island of the Ké Archipelago.

48. CYANIRIS KUEHNI, Röber.

*Plebeius kühni*, Röber, *Iris*, vol. i, p. 60, pl. iv, fig. 29, male (1886).

Described by Röber from East Celebes and the Key Islands. It is very close to the widely-spread *C. puspa*, Horsfield. Especially found on Little but also on Great Ké Island. It is partial to the flowers of *Leguminosæ*.

49. \*CYANIRIS CAGAYA, Felder.

Röber as *Plebeius cagaya*. We doubt the occurrence of two distinct species of *Cyaniris* in the Ké Isles. *C. cagaya* was described from the Philippine Isles.

50. ZIZERA OTIS, Fabricius.

Common on Little and Great Ké Isles on roads and paths flying amongst the grass and low-growing herbs.

51. ZIZERA GAIKA, Trimen.

Very rare, found only on Little Ké, though probably often overlooked. It is the smallest butterfly found in the islands, some of our specimens expanding only .6 of an inch.

52. "PLEBEIUS" TUALENSIS, Röber.

*P. tualensis*, Röber, *Iris*, vol. i, p. 61, pl. v, fig. 26 (1886).

Originally described from the Key Islands, where it is very rare on Little and Great Ké, and usually caught on flowers of the *Leguminosæ*. The male on the upperside is coloured like a typical species

of the genus *Nacaduba*, being dark dull purple, with a narrow external black border. The female on the upperside is dull plumbeous, not dull purple like the male. The markings on the underside are more similar to those of the genus *Zizera* than to those of any other genus known to us. It has no tails. The neuration differs from both the above-named genera in that the first subcostal nervule is entirely separated from the costal nervure in the forewing. It has a near relation in "*Lycæna*" *mærens*, Rosenstock, from tropical Northern Australia, but the male of that species has the wings narrower, the apex of the forewing more acute, and the outer margin straighter, the ground-colour of both wings on the underside darker, and all the markings consequently less prominent. *Lycæna mærens* has been placed by Messrs. Anderson and Spry in "Victorian Butterflies," p. 92, woodcut of male (1894), in the genus *Holochila*.

### 53. PSEUDODIPSAS ILIAS, Felder.

Decidedly rare on Little and Great Ké Isles. Our specimens agree very well with "*Holochila*" *intensa*, Butler, from the Aru Isles and New Guinea. Unfortunately the description is not comparative with *P. ilias*. It has a very quick flight, and sits in the hot sun on the tops of certain bushes with rounded leaves. Röber records it from Key as *Philiris* (n. g.) *ilias*, Felder. But "*Thecla*" *ilias* appears to be congeneric with *Pseudodipsas eone*, Felder (1860), the type of the genus *Pseudodipsas*, so *Philiris* would appear to fall to *Pseudodipsas*. The genus *Holochila*, Felder (1862), cannot stand, being preoccupied in Mammals, and *Erina* (1832-33), Swainson, cannot be used, as it is based on the typical species, "*Papilio*" *erinus*, Fabricius, from Australia. *Polycyma*, Scott (1890), appears on plate xii of Scott's "Australian Lepidoptera" for *Polycyma carythæ*, itself a synonym of *Papilio erinus*, and is a year older than Röber's name *Philiris*. All these names appear to be synonymous with *Pseudodipsas*. The genus *Candalides*, Hübner (1816), type *Rusticus Adolescens xanthospilos*, Hübner, is perhaps the oldest name for this group of butterflies.

### 54. THYSONITIS TRIOPUS, de Nicéville, n. sp.

HABITAT: Great and Little Ké Islands.

EXPANSE: ♂, 1·8 to 2·0; ♀, 2·0 inches.

DESCRIPTION: FEMALE. Nearest to *T. apollonius*, Felder, var. *supous*, H. H. Druce and Bethune-Baker, Proc. Zool. Soc. Lond., 1893, p. 542, pl. xlv, fig. 7, female, from Wammo Dobbo in the Aru Isles; differs in being .4 of an inch greater in alar expanse; and the UPPERSIDE of

*both wings* having the white discal band of twice the width. **UNDERSIDE**, *both wings* have the white discal band of the same width as on the upperside, in var. *supous* the band is wider than on the upperside, though not as wide as in *T. triopus*. Differs from *T. hermes*, Grose Smith, Rhop. Ex., pl. Oriental *Lycaenidæ* iv, figs. 7, 8, *female* (1895), from Korrido and Biak Islands, on the **UPPERSIDE** of *both wings* in having the discal band pure white instead of heavily irrorated with black scales. **UNDERSIDE**, *both wings* have all the metallic green or blue (according to the light) markings much more extensive. Differs from *T. apollonius* from several localities in New Guinea in my collection on the **UPPERSIDE** of *both wings* in having the discal white band much broader and pure white, instead of narrow, dusky and obscure. On the **UNDERSIDE** of *both wings* the discal band is wider, twice as wide on the *hindwing*. **MALE**, Indistinguishable from the same sex of *T. apollonius*. Both sexes tailless.

The description above shews that this species is based on the female sex only. It has been described from three males and one female. It occurs rarely on Great Ké, and flies about the trees along the banks of mountain streams; it is found also in high forest in Little Ké Isle.

#### 55. THYSONITIS KORION, H. H. Druce and Bethune-Baker.

*T. korion*, H. H. Druce and Bethune Baker, Proc. Zool. Soc. Lond., 1893, p. 547, pl. xlvi, fig. 3, *male*.

Originally described from the Kei Islands, where it occurs on Little and Great Ké Isles, on the tops of bushes along the roads and paths. The **FEMALE** (hitherto undescribed) has on the **UPPERSIDE** of the *forewing* the costa widely black, extending into the middle of the discoidal cell, the outer margin broadly and increasingly black, the rest of the wing shining bluish-purple, with a white dash on the disc commencing on the disco-cellular nervules. *Hindwing* with the costa widely fuscous mixed with whitish, the outer margin more broadly black than on the forewing, the middle of the wing shining blue. **UNDERSIDE**, *both wings* exactly as in the male. This species has no tails.

#### 56. THYSONITIS ILLUSTRIS, Röber.

*Plebeius illustris*, Röber, Iris, vol. i, p. 53, pl. iv, fig. 6, *female* (1885).

We have this species from Great Ké only, where it is very rare. Messrs. H. H. Druce and G. T. Bethune-Baker in writing their monograph of the genus in Proc. Zool. Soc. Lond., 1893, p. 552, note that "The male only is described," but Herr Röber says his type specimen



was a female. We have both sexes. The hindwing bears a thin black tail tipped with white.

57. \**THYSONITIS CÆLIUS*, Felder.

Röber as *Plebeius cælius*, Felder, from Key. It is probable that Herr Röber so identified the species which has been described subsequent to his 1891 paper as *T. korion*, H. H. Druce and Bethune-Baker. The latter gentlemen spell the word *cælius*. As figured, this species has no tails.

58. *LYCÆNESTHES EMOLUS*, Godart.

Not rare on Little Ké Island. Caught on flowers and bushes in open places. It is highly probable we think that "*Plebeius*" *seltuttus*, Röber, Iris, vol. i, p. 67, pl. v, fig. 24, *male*; pl. iv, fig. 24, *female* (1886), from the Aru Isles, and East and North-West New Guinea, is the same species as *L. emolus*.

59. *LYCÆNESTHES TURNERI*, Miskin.

*L. turneri*, de Nicéville, Journ. Bomb. Nat. Hist. Soc., vol. xii, p. , n. 13, pl. Z, figs. 24, *male*; 25, *female* (1898).

Much rarer than the preceding species on Little Ké and found with it. It was originally described from Australia, and Australian specimens in de Nicéville's collection agree exactly with both sexes from the Ké Isles.

60. *EVERES ARGIADES*, Pallas.

Somewhat rare on Little and Great Ké, flies near the ground, amongst low plants.

61. *NACADUBA HERMUS*, Felder.

Röber and Ribbe as *Plebeius unicolor*, Röber, from Key, described from Ceram, Key and East Celebes. Herr Röber has sent a male to de Nicéville from Ceram, which proves that *P. unicolor* is a synonym of *N. hermus*. We have both sexes from the Ké Isles.

62. *NACADUBA MEIRANGANUS*, Röber.

Very rare on Little and Great Ké Islands. Originally described from the Aru Isles. Has a very quick flight, and settles on the leaves of bushes by the roadside. In coloration and markings the female of this species very closely resembles that sex of *Lycænesthes turneri*, Miskin.

## 63. NACADUBA ANCYRA, Felder.

Found not commonly on all the islands on the flowers of *Leguminosæ*.

## 64. NACADUBA PERUSIA, Felder.

Little Ké Isle, rare, mostly found sitting on the tops of dry bushes. *N. laura*, Doherty, is very close to *N. perusia*, if indeed actually separable, except perhaps in the female.

## 65. NACADUBA ATRATA, Horsfield.

Rather rare on Little Ké Isle.

## 66. NACADUBA NORA, Felder.

Little Ké Isle. The tailed form appears alone to occur, and is perhaps better known as *N. ardates*, Moore.

## 67. JAMIDES PURPURATA, Grose Smith.

*J. purpurata*, Grose Smith, Nov. Zool., vol. i, p. 574, n. 219 (1894).

Ribbe as *Plebejus astraptus*, Felder. *J. purpurata* was originally described from New Guinea. If we have correctly identified the Ké Island species the male is distinguished by its bluish-purple colour on the upper-side, which is not nearly as brilliantly metallic as it is in *J. bochus*, Cramer, and its allies, and the outer black border to both wings is about 1.5 mm. in width. It is near to *J. cephion*, H. H. Druce, Proc. Zool. Soc. Lond., 1891, p. 367, pl. xxxi, fig. 19, *male*, from the Solomon Isles, but has the black border to both wings on the upperside about twice as broad, and it is not "brilliant morpho blue." It differs from *J. astraptus*, Felder, as figured by Semper from the Philippines, in having the black border to the forewing on the upperside in the male less broad, and on the hind-wing about twice as broad. In the Ké Isles it is rare, and is found on Little Ké Island only.

## 68. LAMPIDES ARATUS, Cramer.

Butler, Ribbe and Röber as *Lampides ætherialis*, Butler, from Ké Dulan (*Butler*), and Key (*Ribbe* and *Röber*). The commonest species of the genus on all the islands of the Ké Archipelago.

## 69. LAMPIDES CELENO, Cramer.

Butler as *L. ælianus*, Fabricius, from Ké Dulan, and Röber as *Plebeius ælianus*, from Key. Also very common on all the islands.

70. LAMPIDES AMPHISSA, Felder.

Rare on Little Ké Island. The *L. areas*, H. H. Druce, from the Solomon Isles, Proc. Zool. Soc. Lond., 1891, p. 368, pl. xxxii, figs. 7, *male*; 8, *female*, is very near to *L. amphissa*, which was originally described from Batjan.

71. LAMPIDES HYLAS, Cramer.

Röber as *Plebeius euchylas*, Hübner. Not rare on damp spots on pathways in Little Ké, common on Great Ké.

72. CATOCHRYSOPS STRABO, Fabricius.

Ribbe as *Plebejus kandarpa*, Horsfield. Occurs commonly on leguminous plants on all the islands.

73. CATOCHRYSOPS LITHARGYRIA, Moore.

This species is found on Koer Island. The male is distinctly blue on the upperside, while *C. strabo*, Fabricius, is as distinctly purple.

74. CATOCHRYSOPS CNEJUS, Fabricius.

Extremely common on *Leguminosæ*. It occurs on Koer and the other islands of the Archipelago.

75. POLYOMMATUS BÆTICUS, Linnæus.

Ribbe as *Plebejus bæticus* from Key. Occurs rarely on Great Ké Island.

76. AMBLYPODIA sp.

Herr Kühn has sent to de Nicéville a somewhat rough coloured drawing of a species of *Amblypodia* which the latter is unable to identify. Herr Kühn caught a single specimen on Great Ké. The drawing appears to represent a female; the upperside is dark umber-brown, the forewing has a pale blue basal patch occupying about a third of the wing, and extending from the subcostal nervure to the inner margin. The hindwing has a similar basal patch, wedge-shaped, narrow at the base of the wing, wide outwardly, and occupying the whole of the discoidal cell. The underside of both wings is as usual in the genus of various shades of brown, more or less mottled with white. No species of true *Amblypodia* has, we believe, hitherto been recorded as far east as the Papuan region.

77. *ARRHOPALA HELIUS*, Cramer.

Rare on Little Ké, not seen at Great Ké. Found on young Djamboe trees (*Jambosa aquæa*, Rumph.).

78. *ARRHOPALA AMYTIS*, Hewitson.

Röber as *Amblypodia micale*, Blanchard, from Key. Common on Little Ké Island on Djamboe and other fruit trees. Mr. Bethune-Baker has kindly identified this species for us.

79. *CURETIS* sp.

Very rare, Kühn has only one male specimen from Little Ké Island in his collection, of which he has sent a coloured drawing to de Nicéville. Without knowing its female, it is difficult to identify the species. It agrees fairly well with *C. tagalica*, Felder, from the Philippines.

80. *HYPOLYCENA DANISOIDES*, de Nicéville.

*H. danisoides*, de Nicéville, Journ. A. S. B., vol. lxxvi, pt. 2, p. 558, n. 13, pl. iii, fig. 21, female (1897).

Very rare. Kühn has bred it, the larva feeding on orchids. The male differs only from the female in being smaller (1.1 inches in alar expanse), it has both wings narrower (less rounded), and the apex of the forewing more acute. The markings are precisely similar. It has no secondary sexual characters whatever.

81. *DEUDORIX EPIJARBAS*, Moore.

Found on Little Ké, and is very rare on flowering trees.

82. *RAPALA PHRANGA*, Hewitson.

Originally described from Batchian. According to the figure the Ké Isle form has rather more green-blue coloration on the upperside of the forewing in the male than the typical form. The FEMALE (hitherto undescribed) has the forewing on the UPSIDE wholly greenish-blue except the costa, apex and outer margin. Otherwise as in the male, save, of course, that the male secondary sexual characters are wanting. "*Deudorix*" *simsoni*, Miskin, from Northern Australia, differs but slightly from the Ké Isles form. It is found commonly on the leaves of trees and bushes along the roads, especially on Little Ké Island.

83. *BINDAHARA ISABELLA*, Felder.

Very rare, only a few specimens from Little Ké Island obtained.

84. *LIPHYRA BRASSOLIS*, Westwood.

A single male only obtained on Little Ké Island. Kühn caught it one evening at the lamp. The Hon. Walter Rothschild in Nov. Zool., vol. v, p. 97, n. 5 (1893), has described *Liphyra brassolis major* from females from Northern Australia. This may be the species named above.

## Family PAPILIONIDÆ.

## Subfamily PIERINÆ.

85. *LEPTOSIA XIPHIA*, Fabricius.

Common on all the islands, softly flying along close to the ground.

86. *ELODINA EGNATIA*, Godart.

The specimens from the Ké Isles agree with Hewitson's figure of "*Pieris*" *padusa* from Australia, except that the forewing is not nearly so produced at the apex, the costa consequently being shorter; the hindwing also is broader. Mr. W. H. Miskin in his Cat. Rhop. Aust., p. 8 (1891) gives *P. padusa* as a synonym of *E. egnatia*, but it is probably quite distinct. *E. egnatia* is not rare on Little Ké Island, but is a butterfly very difficult to catch. The two sexes are almost exactly alike. We have absolutely similar specimens from Wetter and Northern Australia.

87. *CATOPSILIA CROCALE*, Cramer. Plate I, Figs. 5, *larva*; 5a, 5b, *pupa*.

Wallace as *C. alcmeone*, Cramer. Röber as *C. pomona*, Fabricius, *C. crocale*, Cramer, and ab. *flava*, Butler. "*Papilio*" *crocale*, Cramer, and "*Papilio*" *pomona*, Fabricius, were described in the same year (1775). We prefer to use the former name as it was accompanied by a figure. There are several forms of this protean species occurring on all the islands of the Ké Archipelago. Taking those without ocelli on the underside, we have males with the yellow coloration evenly suffused over both wings on the upperside, with females to match them, the males agreeing with Butler's figure of "*Callidryas*" *flava*, from the Moluccas, &c., but the females are not nearly so heavily marked with black on the upperside as in Butler's figure of that sex of *C. flava*. Taking those with ocelli on the underside, we have males with the yellow coloration evenly suffused over both wings on the upperside like *C. flava*, and others with the yellow coloration confined to a well-marked basal area on both wings, beyond which the wing is white; the females are like the other form. It is very common, and Kühn has frequently bred it on "Djohur" trees, the larva being

shagreened, above grayish-green, with a shining steel-blue line above the spiracles, then a spiracular white stripe, which becomes yellow from the second to the fourth segments, the infra-spiracular region is light green, beneath it is bluish-green. Each segment bears six folds or creases, and all the segments are minutely dotted with black. The pupa is pale green, with the head produced into a long pointed process, the thorax humped in the dorsal line, there is a lateral yellow line running from the extreme apex to the posterior end of the pupa.

88. *TERIAS HECABE*, Linnæus.

Röber as *Eurema hecabe* from Key. Butler as *T. photophila*, Butler, from Ké Dulan. He describes the male only, and says it has no sub-apical brown patch on the underside of the forewing, this patch, however, is present in females from Ké. In his latest revision of the genus (*Ann. and Mag. of Nat. Hist.*, seventh series, vol. i, p. 75, n. 51 (1898)), he places *T. photophila* as a synonym of *T. sulphurata*, Butler, which "Ranges from Northern Australia northwards to Timor Laut, Aru, and New Guinea, and thence eastwards to New Ireland, appearing just to touch the Solomons; more to the south it ranges eastwards to the Loyalty, New Hebrides, and Fiji Islands." Common on all the islands.

89. *TERIAS* sp.

Only one specimen from Little Ké. It is allied, from Kühn's description, to *T. læta*, Boisduval.

90. *TERIAS CANDIDA*, Cramer.

Not as common as *T. hecabe*, Linnæus, on Little and Great Ké Islands. Dr. Butler gives Amboyna and Ceram only for this species. Our male specimens agree with Cramer's figure, and have the abdominal margin of the hindwing on the upperside broadly black.

91. \**APPIAS LYNCIDA*, Cramer.

Röber as *Tachyris lyncida* from Key. We have seen this species only from Java, Bali and Lombok.

92. *APPIAS CELESTINA*, Boisduval.

Rare on Little Ké, somewhat more plentifully found on Great Ké Island. Our females are Form I, bluish-white, not rich yellow on the upperside.

## 93. APPIAS CLAVIS, Wallace.

Röber as *Tachyris ada*, Cramer, from Key. Originally described from Ké Island. It is rather rare on Little Ké, not so rare on Great Ké Island.

## 94. APPIAS ALBINA, Boisduval.

Decidedly rare on Little and Great Ké Isles. The Form I of the female, ground-colour white on both surfaces, appears to be the only one found.

## 95. HUPHINA RACHEL, Boisduval.

Röber as *Pieris pitys*, Godart, from Key. "*Pieris*" *rachel* was originally described from Java, but we have seen no specimens from thence. Our examples agree very well with the description, except that the small yellow spot at the external angle (apex) of the hindwing on the underside is often absent, and when present almost obsolete. "*Pieris*" *pitys*, Godart, is also a closely allied species, described from Java, also never seen by us, which is said to have four or five white spots arranged transversely in addition to the apical white spot on the upperside of the forewing, whilst our species has one or at most two subapical white spots only. *P. pitys* is figured by Lucas from Java, but he does not shew the four or five white spots mentioned above, and in other respects his figure does not agree with our specimens from the Ké Isles. Perhaps "*Pieris*" *perictione*, Felder, described from the Arru Islands, is nearest to our species, but it has never been figured, and a description alone is inadequate to enable one to discriminate between very closely allied species, though the description agrees very well with our specimens. *H. rachel* is very common throughout the year on all the islands.

## Subfamily PAPILIONINÆ.

## 96. TROIDES PRIAMUS POSEIDON, Doubleday.

Röber as *Ornithoptera priamus*, Linnæus. The Hon. Walter Rothschild in "A Revision of the *Papilios* of the Eastern Hemisphere, exclusive of Africa," Nov. Zool., vol. ii, p. 191 (1895) records this species as *T. priamus poseidon*, Doubleday, (*l* 2): ♀ —ab. *hecuba*, Röber (Tijd. voor Ent., vol. xxiv, p. 263 (♀, nec ♂) (1891), from the Key Islands. On Little Ké, Great Ké and Koer (Kühn got none from Tiandoe) this butterfly is always to be seen on the wing, but is never abundant. The larva feeds on a species of *Aristolochia*.

97. *PAPILIO POLYDORUS THESSALIA*, Swinhoe. Plate I, Figs. 6, larva; 6a, 6b, pupa.

Röber as *P. polydorus*, Linnæus. The local race *thessalia* was originally described from Ké Island (*Halliburton*). It is usually common on Little and Great Ké Isles, but is sometimes rare, flying in the open forest. The larva is very similar to that of *Troides priamus poseidon*, Doubleday, and feeds on the same plant, a species of *Aristolochia*: it is dark violet in colour, with tentacular fleshy pale red processes on the second, third, sixth, seventh, tenth and eleventh segments; those on the fourth, fifth, eighth and ninth are brownish-red; the process on the sixth segment is based on a pinkish-white spot; that on the seventh segment has a pale base; there is also a series of supra-spiracular processes. The pupa is pale brown, mottled with darker brown, with a pair of red spots on the middle of the back above; it is furnished with numerous foliaceous processes on the abdominal segments.

98. \**PAPILIO FUSCUS ROTALITA*, Swinhoe.

Röber as *P. beccarii*, Oberthür. This local race was described from Ké Island (*Halliburton*). We have not seen it. Mr. Kühn notes that he does not believe that this species ever came from the Ké Isles, as from 1889 to the present date no collector has been on the islands except himself; also that he (Kühn) up to 1896 has sent butterflies from the Ké Archipelago only to Dr. O. Staudinger, except one very small collection to Herr J. Röber, so from whom could Col. Swinhoe have obtained it? In the original description Col. Swinhoe gives *Halliburton* as the collector.

99. *PAPILIO ALBINUS THOMSONII*, Butler. Plate I, Fig. 7, larva.

Originally described from Ké Dulan. Mr. Rothschild in *Nov. Zool.*, vol. iii, p. 322, n. 3 (1896), has described an ab. *mordingtoni* from Little Kei Island, from one female, captured by the late Capt. H. Cayley Webster. Mr. Kühn writes to de Nicéville that had he gone on shore on New Guinea the day Capt. Webster was murdered by the natives, he (Kühn) would have shared the same fate. It was quite an accident that on that day he, for the first time during the expedition, remained on board their vessel. We have not seen this aberration. *P. thomsonii* is a very variable butterfly: in some specimens there is a well-defined oblique subapical white band on the upperside of the forewing which often dwindles away to nothing; the large discal white patch on the upperside of the hindwing varies greatly in size, in some specimens its outer edge is even, and in the other extreme it is highly irregular, being continued along the veins towards the margin; sometimes the



patch ends posteriorly on the first median nervule, sometimes it reaches the submedian nervure; on the underside of the forewing the subapical band is sometimes present, usually absent; on the hindwing there is sometimes a discal series of large irrorated white spots from the costa to the first median nervule, usually entirely absent; the blue and orange submarginal markings are also more or less developed, sometimes both series are absent. It is very common on both Little and Great Ké Isles. The larva is as variable as the butterfly, and feeds on various trees, especially those of the Natural Order *Aurantiaceæ*. The larva when young resembles a bird's dropping. When full-grown it is smooth with no processes; the head is pale green, the body is dark green, becoming yellowish-green laterally, the second, third and fourth segments beneath and the legs are brown, the fifth to thirteenth segments beneath and the prolegs milky-white; the fifth segment bears posteriorly a broad transverse black band, and the eighth segment bears an oblique short black band on each side just above the spiracles; on the fourth segment are two subdorsal milky-blue points on each side one above the other, with a black spot just anterior to the spiracle; on the ninth segment are two subdorsal obliquely-placed milky-blue points on each side one above the other; and on the eleventh segment there is one similar point on each side. Mr. Kühn notes that the spots are sometimes greenish-brown.

100. \* *PAPILIO ÆGEUS ORMENUS*, Guérin.

Röber as *P. ormenus*, Guérin. Mr. Rothschild gives ( $b^2$ ): ♂ — ab. *pandion*, Wallace, also ( $f^2$ ): ♀ — ab. *polydorinus*, Haase, also ( $g^2$ ): ♀ — ab. *amanga*, Boisduval, from the Key Isles, but they are unknown to us from the Ké Archipelago.

101. *PAPILIO ÆGEUS KEIANUS*, Rothschild. Plate I, Fig. 8, larva.

Mr. Rothschild has described this local race from the Little Kei Island (Kei Toal); and also ( $a$ ): ♀ — f. *amaranta*, and ( $b$ ): ♀ — f. *blanca* from the same island (Nov. Zool., vol. iii, p. 422, n. 4 (1896)). All our specimens appear to belong to this local race (not to *P. ormenus*, Guérin), as in the males the discal white band ends on the first median nervule, and does not reach the submedian nervure as it does in *P. ormenus*. In one of our male specimens the orange-red anal spot on the hindwing on the upperside is absent, typically it is present, and Mr. Rothschild has seen no specimen in which it is absent. It is rather rare on Little and Great Ké, the female var. *blanca* especially so, and seen on the wing only at the end of the wet season. The larva feeds on orangeaceous trees. It is brownish-green, with lighter very fine lines

on each segment; the head and legs are black, with two short conical yellow processes on the anterior edge of the second segment, the third, fourth and fifth segments have each three pairs of similar processes, the sixth, seventh, eighth, eleventh and twelfth segments have each two pairs of similar processes; on the fifth segment is a broad black band ending on each side on the spiracular region; on the ninth segment arising from the spiracular region and extending backwards over the tenth segment is a broad oblique lateral band, which terminates in the subdorsal region in a black conical process; on the eleventh segment is a much shorter posteriorly oblique broad black band, not reaching the two black conical processes one on each side of the subdorsal region; the thirteenth segment is white marked with large black patches; posterior to the spiracles the body and the prolegs are white, more or less interrupted with black lines.

102. \**PAPILIO DEIPHOBUS*, Linnæus.

Herr J. Röber in *Tijd. voor Ent.*, vol. xxxiv, p. 275 (1891), described *P. deiphobus*, ab. *hypoxanthos* from the Key Islands. Neither Mr. Rothschild nor we have seen this species from thence. Mr. Rothschild spells the name "*hypoxanthus*."

103. *PAPILIO EUCHENOR OBSOLESCENS*, Rothschild.

Rare in Little Ké, not so rare in Great Ké Island. Mr. Rothschild suggests that *P. ambrax epirus*, Wallace, may occur in the Key islands, but we have not obtained it there. It is found on the Aru islands.

104. *PAPILIO CODRUS TOEALENSIS*, Rothschild. Plate I, Figs. 9, 9a, larva; 9b, 9c, pupa.

Described from Little Kei Island (Kei Toeal). It is not very rare on Little Ké, but is difficult to catch. Kühn has bred it, but does not know the name of its food-plant. The larva is smooth, rapidly increasing in width to the fourth segment, thence decreasing in width to the anal segment, the head, body and legs are yellowish-green; on the dorsal area of the fifth segment are eight short indigo-blue marks which form two diamond-shaped figures; on the twelfth and thirteenth segments are five similar marks, one in the middle with four around the central mark forming an oblong figure; the second, third and fourth segments each bears at the side a short, bluntly-conical, pale red, fleshy process; the thirteenth segment with a pair of diverging similar processes; the spiracles are indigo-blue. The pupa is violaceous light greenish-gray, sometimes yellowish-green; the anterior portion is broad, and produced into a rather high process dorsally; from the apex of this

process (which is dark brown at the tip) descends on each side to the spiracle at about the middle of the pupa a fine indigo-blue line, with a large round blue spot in its middle; the spiracles are dark brown; the pupa ends in a somewhat sharp point.

105. *PAPILIO EURYPYLUS MELAMPUS*, Rothschild.

Described from Little Kei Island (Kei Toal). Mr. Rothschild (Nov. Zool., vol. iii, p. 425 (1896), has also described an ab. *rufinus* from the same island. *P. melampus* is very rare, and is found on both Little and Great Ké Islands.

106. *PAPILIO SARPEDON CHOREDON*, Felder.

Rare on Little and Great Ké Isles. Very quick on the wing.

107. *PAPILIO AGAMEMNON ARGYNNUS*, Druce.

Recorded by Wallace from the Ké Island as *P. agamemnon*, local form *b*, and described from the Ké Island by Druce as *P. argynnus*. It is rather common on Little and Great Ké Islands. The larva feeds on *Anona muricata*, Linnæus, Malay name "Surakajah."

Family HESPERIIDÆ.

108. *TAGIADES JAPETUS*, Cramer. Plate I, Figs. 10, larva; 10a, 10b, pupa.

Röber, Ribbe and Butler. Very common on all the islands. The larva is greenish-white, the skin transparent, very finely striped with white, yellowish between the segmental folds; between the eighth and ninth segments are two yellowish coloured organs visible through the skin; the head is dark brown, heart-shaped, strongly indented above in the dorsal line. Pupa attached openly to a leaf by a few threads and by the cremastral hooks; pale yellowish, streaked throughout with reddish-brown; each wing-cover bears two large irregularly-quadrangular china-white spots, one at the base of the wing, which is the smaller, the other at the anal angle of the expanded wing, about twice as large; between the eyes in front are two white spots like a pair of spectacles; on the third, fourth and fifth abdominal segments is a triangular white spot on each side; the head is produced into a long thin pointed process. The larva lives on sweet potatoes.

109. \* *AMPITTIA MARO*, Fabricius.

Ribbe as *Pamphila maro*. This is probably a wrong identification.

## 110. \*NOTOCRYPTA WAIGENSIS, Plötz.

Röber as *Plesioneura waigensis*. We have been unable to recognise this species from the description only. It was originally described from Waigou.

## 111. NOTOCRYPTA FEISTHAMELII, Boisduval.

Not common on Great Ké, rare on Little Ké. Frequents wet places. Specimens from the Ké Isles and Northern Australia are peculiar in having the discal diaphanous band on the upperside of the forewing produced almost to the costa anterior to the costal nervure, instead of ending anteriorly on the subcostal nervure as usual.

## 112. \*TELICOTA AUGIAS, Linnæus.

Röber as *Pamphila augias*. We have not seen it from the Ké Archipelago, but its occurrence there is not improbable.

## 113. TELICOTA BAMBUSÆ, Moore.

Apparently not rare. Kühn has sent de Nicéville seven male specimens.

## 114. \*TELICOTA MOSELEYI, Butler.

*Pamphila moseleyi*, Butler, Ann. and Mag. of Nat. Hist., fifth series, vol. xiii, p. 198, n. 50 (1884).

Ké Dulan (*Butler*). Capt. E. Y. Watson in Proc. Zool. Soc. Lond., 1893, p. 103, places this species in the genus *Telicota*. It may be the same species as the next, with which it agrees in size. It was described from a male, while our *Padraona augiades*, Felder, is represented by a single female; the description of *P. moseleyi* does not agree with our specimen, but the differences may be due to sex.

## 115. PADRAONA AUGIADES, Felder.

This species was described from a male from Amboina, which was subsequently figured in the "Reise Novara." Of the six distinct orange and black Skippers we possess from the Ké Islands, this is by far the largest. It appears to be rare, we have a single female only, which is very similar to examples of the same sex of *P. palmarum*, Moore, from India, but is much larger, and is more tawny, less purple, coloured.

## 116. PADRAONA PROCLES, de Nicéville.

*P. procles*, de Nicéville, Journ. Bomb. Nat. Hist. Soc., vol. vii, p. 353, n. 21, pl. J, figs. 7, male; 8, female (1892).

Originally described from the Ké Isles, where it appears to be a common species on all the islands.

117. \*PADRAONA SUNIAS, Felder.

Dr. Butler records this species with a query from Ké Dulan. It was originally described from Amboina, but has not been figured. We have not been able to recognise it from the description only. Messrs. Elwes and Edwards place it as a synonym with a query of *Telicota* [*Padraona*] *dara*, Kollar (Trans. Zool. Soc. Lond., vol. xiv, p. 254 (1897)).

118. \*PADRAONA MÆSA, Moore.

Röber as *Pamphila mæsa*. We have no species of the genus from the Ké Archipelago which agrees with *P. mæsa*.

119. PADRAONA, sp. 1.

HABITAT: Little Ké Isle.

EXPANSE: ♂, 1·4; ♀, 1·5 inches.

DESCRIPTION: MALE. UPPERSIDE, *both wings* black, with a slight purplish gloss; all the markings yellow; *cilia* yellow. *Forewing* with a short costal streak from the base of the wing; a similar streak in the discoidal cell; the space between these two streaks slightly irrorated with yellow scales; three conjoined subapical elongated dots, of equal length, the middle one placed slightly nearer the base of the wing than the others; four obliquely-placed discal spots, the anteriormost in the lower discoidal interspace small and quadrate, the second spot occupying the base of the second median interspace, its outer end excavated, the third spot larger than the second, occupying the middle of the first median interspace, its outer end excavated, the fourth spot crossing the middle of the submedian interspace, quadrate, its outer end excavated, its inner side not in a line with the spot anterior to it, being placed nearer the outer margin; from the posterior inner angle of this last-named spot runs a line of yellow scales along the submedian nervure to the base of the wing; a streak in the sutural area, its outer end in a line with the outer edge of the spot anterior to it. *Hindwing* with a rather small indistinct clump of setæ at the base; a discal transverse band, with even edges, and of equal breadth throughout, occupying the middle of the wing; some yellow setæ in the submedian interspace. UNDERSIDE, *both wings* with all the veins narrowly black; a narrow black anteciliary line, ending on the hindwing at the first median nervule. *Forewing* black, but the costa and apex to just posterior to the first

median nervule, where it fines away to nothing, dull brownish-yellow; the markings much as on the upperside, but those on the disc broader. *Hindwing* dull brownish-yellow; the discal band much narrower than on the upperside. ABDOMEN narrowly ringed with yellow. FEMALE. Differs from the male only in being a little larger.

This description has been drawn up by de Nicéville from three males and three females. It is a very distinct species, but he has not ventured to name it, as it has probably been already described from New Guinea or Australia, from whence he possesses but few species of the genus. It is very near to *P. autoleon*, Miskin, from Northern Australia.

120. PADRAONA, sp. 2.

HABITAT: Ké Isles.

EXPANSE: ♂, ♀, 1.0 inch.

DESCRIPTION: MALE. UPPERSIDE, *both wings* black, with golden-yellow markings; *cilia* yellow, marked with black at the ends of the veins, broadly on the forewing, narrowly on the hindwing. *Forewing* more yellow than black, there being a large basal triangular yellow patch from the costa to the submedian nervule and first median nervule, a short yellow streak in the submedian interspace, and a longer one in the sutural area; a discal yellow band extends nearly across the wing from close to the costa to the submedian nervule, its anterior portion shifted inwardly and out of line with the posterior portion, consisting of three conjoined increasing spots, the rest of the band consists of five spots, their inner edge straight, their outer edge toothed. *Hindwing* with a small yellow spot in the middle of the discoidal cell, with some yellow setæ anterior to it; a broad curved discal band, commencing just posterior to the costa by an oval spot, posterior to which is a small triangular spot placed nearer the margin than the spot anterior to it, and joined to the discal portion of the band, which latter crosses the middle of the wing, and is of equal width throughout, with slightly irregular edges. UNDERSIDE, *forewing* marked somewhat similarly to the upperside, but the base of the wing is black; there is a small patch of yellow scales posterior to the three anterior spots of the discal band; also a submarginal yellow band beyond the discal band from the costa to the first median nervule. *Hindwing* yellow; the discal band defined on both sides with a narrow black line; a prominent anteciliary black thread. ABDOMEN black, narrowly ringed with yellow. FEMALE, very similar to the male, but all the yellow markings on the upperside reduced in size, leaving more of the black ground-colour visible.

This description has been drawn up by de Nicéville from twelve

male and two female examples, which were received from Kühn as *Hesperia flavovittata*, Latreille, described from New Holland, with which description as far as it goes the specimens agree fairly well, but Mr. W. H. Miskin in his Syn. Cat. of the Lep. Rhop. of Australia places *H. flavovittata* in the genus *Taractrocera*, distinguished by its short round-clubbed antennæ, while the species described above has the longer pointed-clubbed antennæ of the genus *Padraona*. It appears to be quite a distinct species, but has probably already been named, indeed, in de Nicéville's collection from Mackay in North Australia are exactly similar specimens, which agree with Hewitson's description of "*Ancyloxipha*" *agraulia*, from the same region. The correct spelling of the genus is *Ancyloxypha*. Miskin places the latter species in the genus *Apaustus*, Hübner, and gives *Pamphila sunias*, Felder (see no. 117 above) as a synonym, though it has eight years' priority.

## 121. PADRAONA, sp. 3.

KABITAT: Ké Isles.

EXPANSE: ♂, .8; ♀, .9 of an inch.

DESCRIPTION: MALE. UPPERSIDE, *both wings* black, with yellow markings; *cilia* of the forewing black anteriorly, becoming yellow posteriorly, of the hindwing yellow, the terminations of the median nervules streaked with black. *Forewing* with a triangular yellow streak from the base of the wing to beyond the middle, not quite reaching the costa anteriorly, bounded by the submedian nervure and second median nervule posteriorly, its outer edge inwardly oblique; three conjoined subapical spots, the anteriormost a mere dot, the second twice as large as the one before it, the third twice as large as the second; a discal band consisting of five portions, separated from the subapical spots, the two anteriormost portions very small, the third elongated, occupying the base of the second median interspace, the fourth of the same length as the third, occupying the middle of the first median interspace, the fifth very narrow and linear, the outer edge of this band is nearly even, the inner edge very irregular, owing to the third and fourth spots being so much broader than the others; a yellow streak occupying the basal half of the sutural area. *Hindwing* with a small yellow spot in the middle of the discoidal cell; a broad discal band occupying the middle of the wing, both edges irregular. UNDERSIDE, *forewing* marked as above, but the apex is broadly yellow. *Hindwing* yellow throughout, except a broad black streak in the submedian interspace; the spot in the cell and the discal band defined outwardly by a narrow black line; an anteciliary black thread.

ABDOMEN yellow, narrowly banded with black. FEMALE differs from the male only in having the wings broader, and the apex of the *forewing* less produced.

Described by de Nicéville from six male and one female specimens. It is an easily recognised species, is the smallest of the yellow and black species occurring in the Ké Archipelago, and is not named here as it is probably known already from neighbouring islands. It is near to *P. mæsoïdes*, Butler, described from Malacca, and figured by Moore from Ceylon, but is much smaller, and differs a good deal in the details of the markings.

122. BAORIS (*Chapra*) MATHIAS, Fabricius.

The form of this species occurring in the Ké Isles has in the male only two most minute dots in the median interspaces in the forewing, on the underside of the hindwing the discal spots are also very small; the female is normal. *C. agna*, Moore, has the spots smaller than *C. mathius*, the present form has them smaller still. It is a common species on Little Ké Island.

123. BAORIS (*Parnara*) PHILIPPINA, Herrich-Schäffer.

This species has no spots in the discoidal cell of the forewing, there is a discal series normally of seven spots, but several of the anterior ones are often wanting, in an extreme form there are only two spots in all placed in the median interspaces. It is a common species on Little Ké Island.

124. \* BAORIS (*Parnara*) LARIKA, Pagenstecher.

Röber records this species from Key as *Pamphila larika*. It was described from Amboina (Jahr. des Nass. Ver. für Natur., vol. xxxvii, p. 207, pl. vii, fig. 1, *female* (1884). It is evidently closely allied to the preceding species, but has all the spots on the upperside of the forewing larger. Doubtless Herr Röber did not know *Parnara philippina*, Herrich-Schäffer, or he would have so named his specimens from Ké. It is very doubtful if two such closely allied species as *P. philippina* and *P. larika* are found in the Ké Archipelago, even if they be really distinct.

125. HASORA DOLESCHALLII, Felder.

Röber as *Ismene doleschalli* [sic!]. This beautiful species was originally described from the Moluccas. It is rather rare on Little and Great Ké Islands. The opposite sexes do not differ in markings and coloration. Kühn has bred it, but has not sent de Nicéville a description of its transformations.



## 126. HASORA DISCOLOR, Felder.

This species has been identified by de Nicéville from a coloured drawing of an unique specimen in Kühn's collection, taken on Little Ké Island, and which appears to be a female. The species was originally described doubtfully from Java. It is one of the handsomest "*Ismenes*" known. In de Nicéville's collection are both sexes from Northern Australia.

127. HASORA (*Parata*) MALAYANA, Felder.

Ribbe as *Ismene malayana*. Identified by de Nicéville from three females which agree exactly with Felder's figure of the species, and with some female specimens in de Nicéville's collection from the Andaman Isles. The Ké examples have no transparent spots whatever on the fore-wing. Messrs. Elwes and Edwards in their recent monograph, p. 301, place this species as a synonym of *H. chromus*, Cramer, which latter according to Dr. Aurivillius is a synonym of *H. alexis*, Fabricius (Ent. Tids., vol. xviii, p. 150, n. 68 (1897)).

## 128. BADAMIA EXCLAMATIONIS, Fabricius.

Not uncommon on Little and Great Ké Islands. It is found from India to Australia.

## EXPLANATION OF PLATE I.

- Fig. 1, larva, *Euplœa (Hirdapa) assimilata*, Felder, p. 256.  
 ,, 2, larva; 2a, head of larva; 2b, 2c, pupa, *Cethosia cydalima*, Felder, p. 258.  
 ,, 3, young larva on food-plant; 3a, full-grown larva, *Neptis (Rahinda) consimilis*, Boisduval, p. 260.  
 ,, 4, 4a, 4b, pupa, *Charaxes keianus*, Rothschild, p. 262.  
 ,, 5, larva; 5a, 5b, pupa, *Catopsilia crocale*, Cramer, p. 271.  
 ,, 6, larva; 6a, 6b, pupa, *Papilio polydorus thessalia*, Swinhoe, p. 274.  
 ,, 7, larva, *Papilio albinus thomsonii*, Butler, p. 274.  
 ,, 8, larva, *Papilio ægeus keianus*, Rothschild, p. 275.  
 ,, 9, 9a, larva; 9b, 9c, pupa, *Papilio codrus tocalensis*, Rothschild, p. 276.  
 ,, 10, larva; 10a, 10b, pupa, *Tagiades japedus*, Cramer, p. 277.